

Appl. No. 09/887,993
Amndt. dated September 11, 2003
Reply to Office Action of July 21, 2003

REMARKS/ARGUMENTS

Election and Restriction Requirement

Claims 6, 7, 10-12 and 20 were withdrawn by the examiner. Claims 1-5, 8-9, and 13-19 were elected for further examination.

Specification Amendment

Applicant thanks Examiner Ceric for suggesting the changes in the abstract. Based on the suggestion, the text of the abstract has been amended, as shown hereinabove. The abstract is now in an allowable form, therefore, the objection of the abstract should be removed.

Claim Amendment

In claims 1-2, 8-9, 17 and 19, the word "first" in the term "first structure" has been deleted according the examiner's suggestion.

In claims 1 and 8, the word "circular" in "hollow circular inner portion" and "circular inner wall portion" has been deleted. Claim 1 now recites in part "a hollow tubing having an outer wall and a hollow inner portion, said outer wall having an inner wall portion".

Further, claims 1 and 8 now recites a structure disposed along a center portion within said hollow tubing, said structure providing a stationary surface for affecting a laminar flow of a liquid flowing within said hollow tubing whereby a maximum flow velocity of the laminar flow is located substantially midway between said stationary surface and said inner wall portion. This recitation is properly supported in the specification (see paragraph [00027]).

In claims 5 and 9, the misspelled word "kind" has been corrected to "kink".

In claim 8, "first component" has been changed to "component" according to the examiner's suggestion.

Claim 15 has been amended to include the steps of:

providing a laminar flow of a liquid through the hollow tubing; and

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shifting the laminar flow of the liquid so that a maximum velocity of the laminar flow is located substantially midway between a center portion and the outer wall of the hollow tubing, whereby a rise in temperature along an outer surface of the outer wall decreases.

These added steps are fully supported in the specification (see paragraph [00027]).

Claim 16 has been canceled.

Claims 17-18 have been amended to properly depend from claim 15, and refer to proper preceding steps.

In claim 19, the redundant wording has been deleted to clearly recite the steps of the claimed method.

All the amendments to the claims are proper and there is no new matter added. Applicant believes claims 1-5, 8-9, and 13-15, and 17-19 are in an allowable form. Reconsideration of these claims are respectfully requested.

Claim Objection

Claims 16-19 were objected to because of an informality.

Claim 16 has been canceled. Claims 17-19 now depend from the amended claim 15, which, as stated above, is in a proper and allowable form. Accordingly, the objection of claims 17-19 should be removed.

Rejection under 35 U.S.C. § 112

Claims 1-5, 8-9 and 13-19 were rejected to as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As stated above, in claims 1-2, 8-9, 17 and 19, the word "first" in "first structure" and "first component" has been deleted.

In claims 1 and 8, the term "circular" in "a hollow circular inner portion" has been deleted.

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In claim 13, the term "vehicle" in "said vehicle system" has been deleted.

Claim 15 has been amended to clearly recite the steps of the claimed method, as shown above.

Claim 16 has been cancelled.

The recommendations of the examiner have been taken into consideration and corrections have been made accordingly. Applicant believes that the amended claims 1-5, 8-9, 13-15, and 17-19 have now overcome the rejections under 35 U.S.C. § 112.

Rejection under 35 U.S.C. § 102 (b)

Claims 1, 8, and 15-18 were rejected to as being anticipated by Newton.

Newton discloses condenser 10 for condensing refrigerant gases into liquid refrigerant. Condenser 10 has a plurality of vertical tubes 12. (col. 2, lines 12-14). Gas or vapor enters the condenser tubes (12) at a top inlet or header 20 and liquid condensate is removed from a bottom sink or outlet 22. (col. 2, lines 17-19). The air or other coolant is directed between the fins 14 and by the tubes 12. (col. 2, lines 16-17). The guide means 30 is provided to guide condensate from the interior primary condensing surface 12S. (col. 2, lines 29-31, and see Fig. 2).

The condenser of Newton is materially different from the cooling system and method of claims 1, 8 and 15.

Tubes 12 of Newton have no structure providing a stationary surface within a center portion of the tubing for affecting a laminar flow of a liquid flowing within said hollow tubing whereby a maximum flow velocity of the laminar flow is located substantially midway between said stationary surface and said inner wall portion.

Further, tubes 12 of Newton, without fins 14 or other heat exchange surface (see col. 2, lines 14-16), will not produce a cooling effect when coupled with a vehicle component or a

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system component, as recited in claim 8. Gas and vapor entering tubes 12 is cooled by the coolant in the fins or other heat exchanger surface (as above-stated).

Based on the forgoing reasons, the rejection under 35 U.S.C. § 102 (b) based on Newton should be withdrawn.

Claims 1-5 were rejected under 35 U.S.C. § 102 (b) as being anticipated by Midland Wire Cordage Company Limited (Midland).

Midland discloses a turbulator having an elongated member provided along its length with wire or like loops having the function of creating turbulence in fluid flow past the loops. (col. 1, lines 11-14).

The turbulator of Midland is materially different from the cooling system of claims 1-5. The cooling system of claims 1-5 of the present application has a structure with a stationary surface within a center portion of the tubing affecting a laminar flow of a liquid flowing within said hollow tubing whereby a maximum flow velocity of the laminar flow is located substantially midway between said stationary surface and said inner wall portion. The structure of claims 1-5 does not create a turbulent flow, unlike the turbulator of Midland. The difference between the turbulent flow and laminar flow is explained in paragraphs [0003]-[0004] of the present application. If the turbulator of Midland is used in the hollow tubing of claims 1-5, it will create a turbulent flow, which may have a negative effect such as decreasing the pressure inside the cooling system. The claimed cooling system works in conjunction with laminar flow, not turbulent flow. (see the present application, paragraph [00036], lines 12-13).

Accordingly, Midland cannot be viewed as anticipating the cooling system of claims 1-5, the rejections of these claims based on Midland should be withdrawn.

Rejection under 35 U.S.C. § 102 (e)

Claims 1, 2, 8, 9 and 14-19 were rejected under 35 U.S.C. § 102 (e) as being anticipated by Yu et al. (Yu).

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Yu discloses a heat exchanging device including tubes 12 wherein the fluid is cooled by the secondary fluid, such as air passing over the fins 14 (col. 2, lines 47-49). Yu also discloses turbulator 30 having coil members 34, 42, which cause turbulence to occur and thus the heat exchange is made greater. (col. 3, line 64-col. 4, line 4). Since the fluid inside tubes 12 is relatively hotter than the secondary fluid (coolant), the turbulence of the hotter liquid causes the temperature rise on the wall of tubes 12 (for greater heat exchange).

Therefore, Yu's device is clearly materially different from the cooling system of claims 1, 2, 8, 9 and 14-19, which has a structure with a stationary surface within a center portion of the tubing affecting a laminar flow of a liquid flowing within said hollow tubing whereby a maximum flow velocity of the laminar flow is located substantially midway between said stationary surface and said inner wall portion, resulting in limiting the temperature rise on the outer wall.

Further, Yu's tubes 12 and turbulator 30, without "the secondary fluid, such as air passing over the fins" will not produce a cooling effect when coupled with a vehicle component or a system component.

Based on the aforementioned, the rejection based on Yu should be removed.

Rejection under 35 U.S.C. § 103 (a)

Claim 13 was rejected under 35 U.S.C. § 103 (a), as being unpatentable over Yu et al. (Yu).

Claim 13 depends from claim 8 and thus contains all elements cited in claim 8. In addition, as stated above, Yu's tubes 12 and turbulator 30 do not produce a cooling effect. Instead, Yu's heat exchanger relies on "the secondary fluid, such as air passing over the fins" to provide cooling. Coupling Yu's construction including the fins to an electronic control module may be very cumbersome or unfeasible.

Accordingly, the rejection under 35 U.S.C. § 103 (a) based on Yu should be removed.

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CONCLUSION

Applicants believe that the application, as amended, is now in allowable form and action toward that end is respectfully requested. If any issues remain that can be resolved by telephone, Examiner Johnson is invited to call the undersigned attorney at (317) 237-0300. In addition, please provide any extensions of time, which may be necessary and charge any fees, which may be due to Deposit Account No. 02-0390, but not to include payment of issue fees.

Respectfully Submitted,

By:



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I hereby certify that, on the date shown below, this correspondence is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the address above on the date indicated below.

By: Aimee J. Ellett

Aimee J. Ellett

Date Sept. 11, 2003